By FRANK de LEEUW and THOMAS M. HOLLOWAY

The High-Employment Budget: Revised Estimates and Automatic Inflation Effects

The high-employment budget provides a summary measure of the effects of a Federal fiscal program on aggregate demand. It is a better measure for this purpose than the actual budget because it excludes the changes in receipts and expenditures that are automatic responses to fluctuations in economic activity. The November 1980 SURVEY OF CURRENT BUSINESS presented historical estimates of the high-employment budget, prepared jointly by BEA, the Council of Economic Advisers (CEA), the Federal Reserve Board, the Office of Management and Budget, and the Treasury.[1]
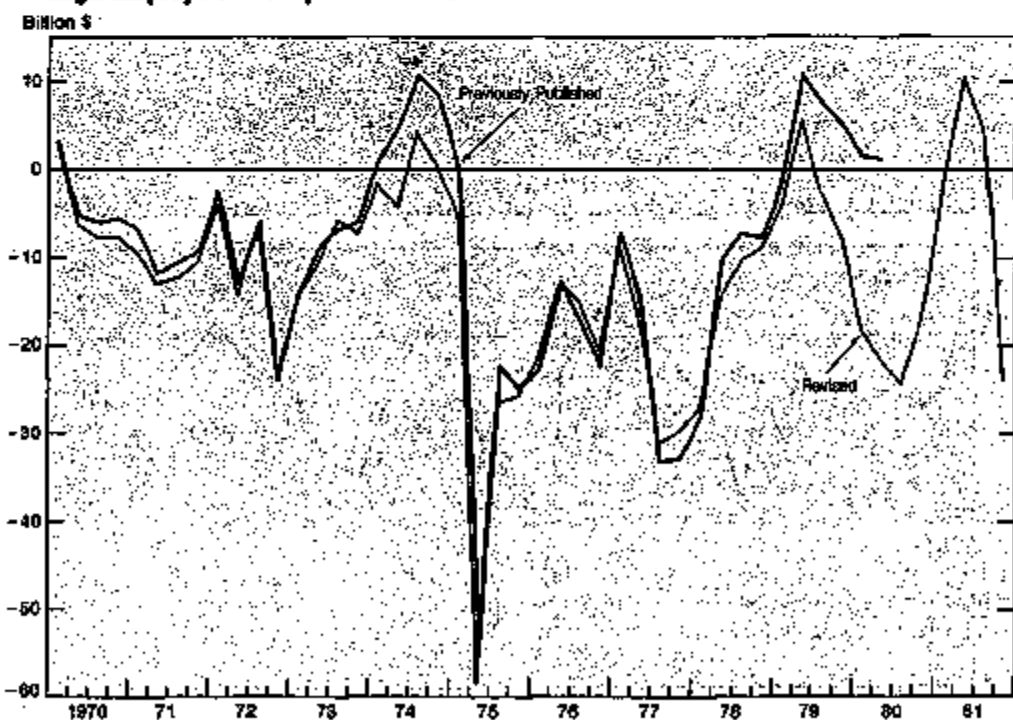
This article presents revised estimates. The revisions are primarily due to the comprehensive revisions in the national income and product accounts (NIPA's) that became available in December 1980. Potential GNP—the trend level of real output from which cyclical deviations are measured in calculating the high-employment budget—was revised by the CEA to be consistent with the NIPA revisions.[2] Minor factors contributing to the revisions of the high-employment budget are (1) new labor force statistics incorporating the results of the 1980 Census, (2) reestimates, using recent data, of some of the equations used to calculate the high-employment budget, and (3) small changes in methodology.[3]

In addition, this article presents, for the first time, estimates of changes in the high-employment budget due to the automatic response of receipts and expenditures to inflation. One major limitation of the previously published budget estimates as a measure of discretionary fiscal policy is that they are highly sensitive not only to discretionary policy, such as new tax laws or spending programs, but also to other factors—to demographic changes, to changes in economic growth, and especially to inflation. Inflation automatically raises expenditures because several important Federal programs, such as social security, are linked to changes in some measure of the general price level; at the same time, inflation automatically raises receipts because higher prices mean higher dollar amounts subject to tax and, in the case of personal income taxes, higher marginal tax rates applied to these higher dollar amounts. In recent years, inflation has also resulted in a higher taxable wage base for social security contributions. The impact of inflation on receipts has tended to be larger than the impact on expenditures, and therefore inflation has tended to push the Federal budget towards surplus.

It is useful to measure this automatic inflation effect and to subtract it from total changes in the high-employment budget. The residual summarizes budget changes apart from

1. Frank de Leeuw, Thomas M. Holloway, Darwin G. Johnson, David S. McClain, and Charles A. Waite, "The High-Employment Budget: New Estimates, 1955-80," SURVEY OF CURRENT BUSINESS, 60 (November 1980): 13-43.

2. The potential GNP estimates used in this article are the provisional revisions discussed by the CEA in Economic Report of the President (January 1981), pp. 180-81.

3. The changes in methodology include new income share equations, discussed below, and cyclical adjustments in net interest and in Federal Reserve profits taxes (payments by Federal Reserve banks to the U.S. Treasury, treated as taxes in the NIPA's).

CHART 4

High-Employment Surplus or Deficit

Billion $

U.S. Department of Commerce, Bureau of Economic Analysis

both cycle-induced and inflation-induced changes. The residual provides a better indication of changes that are discretionary than the total high-employment budget. The residual, however, is not necessarily a better measure of the effect of fiscal policy on aggregate demand. Inflation-induced budget changes and discretionary budget changes both affect aggregate demand, and an analysis of fiscal policy needs to take both types of change into account.

The remainder of this article is in two sections. The first is a summary of results of the revisions of the high-employment budget and of the separation of changes in this budget into changes due to the automatic inflation effect and changes due to other factors. The second section describes the methodology used to estimate the automatic inflation effect on changes in the high-employment budget.

Results

Revised estimates

Chart 4 shows the revised high-employment surplus or deficit from 1970 to the present, and the dollar estimates published in the November 1980 SURVEY. The chart shows two periods of substantial reduction ($5 billion or more) from the previously published estimates, one in 1974 and the other in 1979 and the first half of 1980. In both periods, the main source of reduction is the comprehensive revisions of the NIPA's. The 1974 reduction is due to the decreased severity of the 1974–75 downturn in the re-

Table 1.—Revisions in Estimates of the High-Employment Surplus or Deficit, Selected Quarters

(Billions of dollars, seasonally adjusted annual rates)

| Date	Revised surplus/deficit (—)	Previously published surplus/deficit (—)	Revisions	Sources of revisions	
				NIPA revisions	Reestimated equations and methodology changes
1970:2	-6.3	-5.4	-0.9	-1.6	.7
1970:3	-7.8	-5.0	-1.8	-2.4	.6
1974:2	-4.2	4.4	-8.8	-9.2	.6
1974:3	4.1	10.5	-6.4	-6.7	.3
1979:3	-2.7	7.4	-19.1	-9.3	-.4
1979:4	-7.7	5.1	-12.8	-12.1	-.7
1980:1	-18.3	1.4	-19.7	-18.5	-1.2
1980:2	-21.7	1.0	-22.7	-22.5	-.1

vised NIPA's; this decreased severity reduces the difference between the actual budget and the high-employment budget. The 1979–80 reduction is mainly due to downward revisions in Federal receipts.

The high-employment surplus/deficit has fluctuated widely in recent years. Chart 5 shows high-employment receipts, expenditures, and the surplus/deficit, each expressed as a percent of potential GNP, and provides some indication of the sources of these fluctuations. From 1976 through 1981, high-employment receipts increased as a percent of potential GNP in most quarters; the increase was due to inflation throughout the period and to the introduction of the windfall profits tax in 1980. This upward movement was interrupted by tax cuts in 1977 and at the end of 1981. High-employment expenditures fluctuated around 21 percent of potential GNP from 1975 through 1979, then rose to 22 percent by 1981:1, and subsequently held at a ratio near 22 percent.

The sources of the revisions in the high-employment budget for selected quarters are shown in table 1. The NIPA revisions were the major source in all of the quarters shown. The remaining sources of revision—new labor force data, methodological changes, and reestimated equations—slightly raised the high-employment surplus (lowered the deficit) in the early 1970's and had the reverse effect in recent years. The earlier change is mainly due to a higher esti-

CHART 5

High-Employment Expenditures, Receipts, and Surplus/Deficit as a Percentage of Potential GNP


Percentage of potential GNP
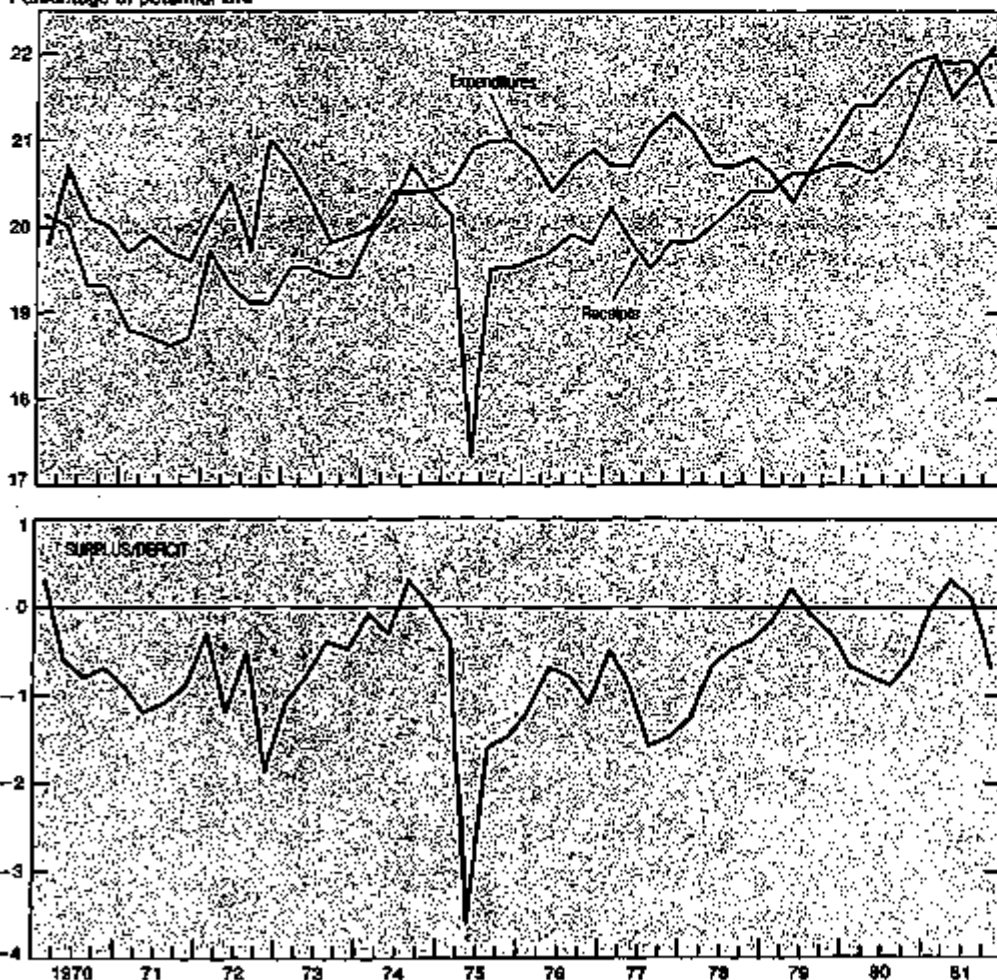
mate of the elasticity of social insurance contributions with respect to covered wages and salaries; the recent change, to a downward revision for the last few years in the estimated elasticity of personal taxes with respect to personal income. It should be noted that the respecification of the equations for estimating the share of various types of income in GNP, which was necessary in order to separate inflation-induced changes from other changes, had very little impact on total high-employment receipts.

(The new income share equations are described in the methodology section.)

Table 2 shows revised unemployment rate gaps and GNP gaps underlying the high-employment budget estimates. The GNP gap, a key concept in converting the actual budget to a high-employment budget, equals potential GNP less actual GNP, divided by potential GNP. Table 3 shows revised actual and high-employment receipts, expenditures, and the surplus or deficit in billions of dollars and as a percentage of GNP.
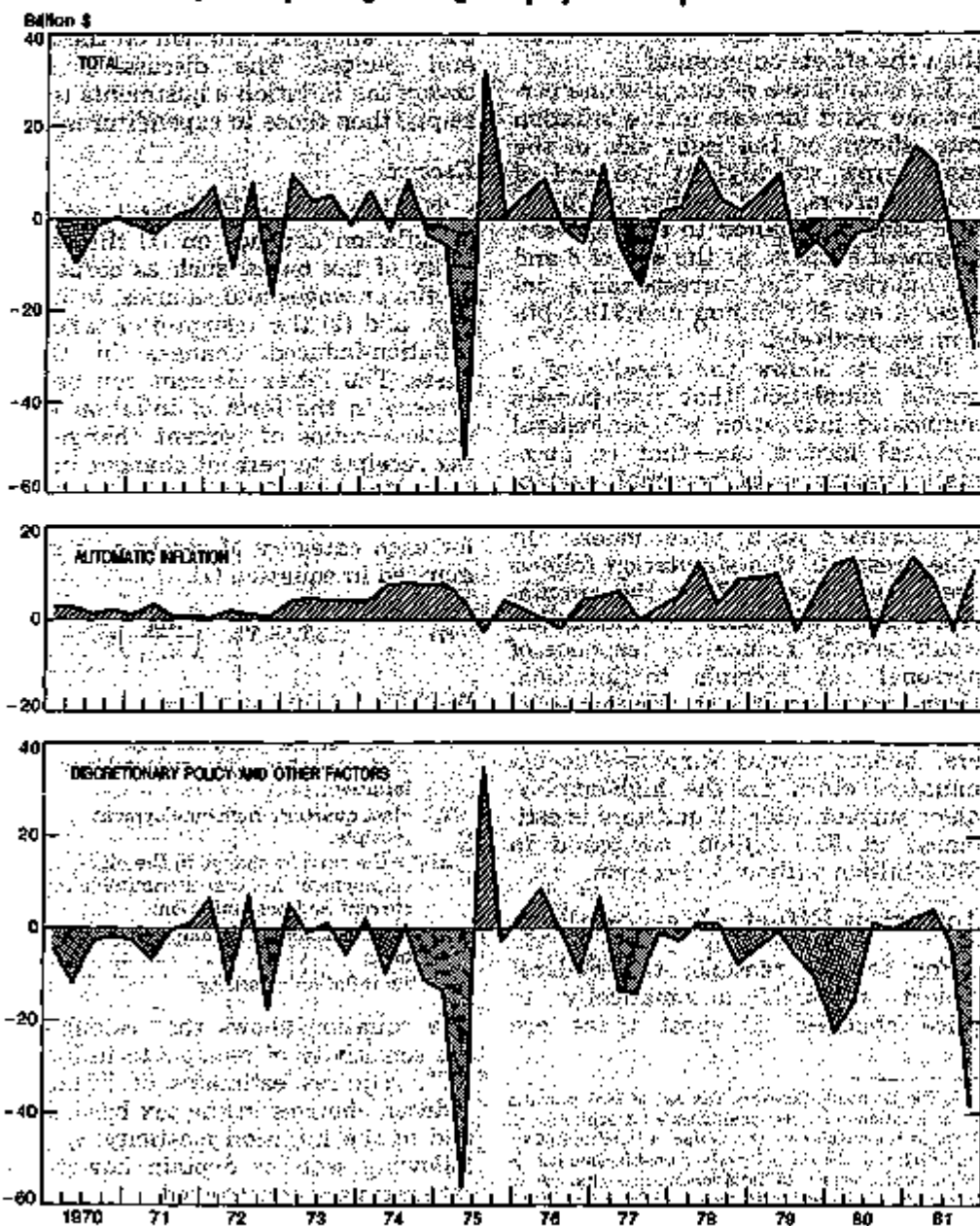
Sensitivity to potential GNP

Potential GNP, an estimate of the output the economy could produce at an assumed high-employment unemployment rate, has a strong influence on the level of the high-employment surplus/deficit and a weaker influence on its changes. Because there is a wide range of plausible estimates of potential GNP, it is useful to measure the sensitivity of the high-employment budget to the level and rate of growth of potential GNP.

The assumed high-employment unemployment rate underlying the estimates of potential GNP used in this article is 5.1 percent for 1975–81 (table 2). Had the assumed rate been 6 percent, potential GNP would be lower by about 1.3 percent. A 6-percent high-employment unemployment rate would increase the high-employment deficits in 1978 from $15.1 billion to $25.8 billion, in 1979 from $2.1 billion to $14.3 billion, and in 1980 from $20.3 billion to $33.7 billion. As a percent of potential GNP, the 1978 deficit would increase from 0.7 percent to 1.2 percent, the 1979 deficit from 0.1 percent to 0.6 percent, and the 1980 deficit from 0.7 percent to 1.2 percent.

The estimated rate of growth of constant-dollar potential GNP is 2.9 percent per year since the first quarter of 1979, and slightly higher in 1977–78. Had the estimated growth since 1977:1 been 0.5 percentage points higher per year, the high-employment deficit would have been lower by $1.9 billion in 1977:4, $5.1 billion in 1978:4, $9.0 billion in 1979:4, and $13.4 billion in 1980:4.

Automatic inflation effects

The separation of changes in the high-employment budget into a component due to the automatic inflation effects and a component due to discretionary policy changes and other factors is shown in table 4 and chart 6. The decomposition of changes in, rather than the levels of, the high-employment surplus or deficit avoids the need for choosing a "normal" or "equilibrium" price level from which to measure the deviation of the actual price level—a choice that would necessarily be arbitrary.

CHART 6

Sources of Quarterly Change in High-Employment Surplus/Deficit

In chart 6, which shows changes in the high-employment surplus/deficit, areas above zero (shaded by diagonal lines) represent periods of movement toward surplus, and areas below zero (shaded by dots) represent periods of movement toward deficit. Changes in the total high-employment surplus/deficit, shown in the top panel of the chart, have fluctuated widely, sometimes moving toward deficit and sometimes toward surplus. The inflation-induced component, shown in the middle panel of the chart, has nearly always moved toward surplus. This component has been increasingly irregular since 1975, largely due to periodic inflation adjustments of social security and pay of Federal employees.

The remaining component, reflecting discretionary policy changes and other factors, shown in the bottom panel of the chart, has usually moved toward deficit, especially since 1976. The three periods since 1976 in which the total has moved toward deficit—mid-1977, mid-1979 to mid-1980, and late 1981—have all been periods of marked movements toward deficit in the discretionary and other component. The periods in which the total has moved toward surplus—early 1977, late 1977 to mid-1979, and late 1980 to mid-1981—have all been periods of marked movement toward surplus in the inflation component.

Two simulations of an increase in the rate of inflation

A useful calculation based on the new methodology is a simulation of the automatic effects of increasing the rate of inflation one percentage point (at an annual rate) above actual inflation. Table 5 shows the results of such a simulation beginning in the second quarter of 1977; results for other recent beginning dates would be proportional to the size of the Federal budget, but otherwise similar to those in table 5. The left side of table 5 shows the effects of this increase in the inflation rate on quarterly *changes* in Federal receipts and expenditures; the right side of the table cumulates these changes to show the effects on *levels* of receipts and expenditures.

The receipts column on the left side of the table shows a large initial

effect, largely due to corporate profits taxes. Corporate profits before taxes, which are an approximation of the tax base, typically rise with an increase in the rate of inflation before falling back toward their average share of national income. Other receipts—personal taxes, contributions for social insurance, and indirect business taxes—rise more slowly, but are responsible for most of the effect of the increase in the rate of inflation on receipts beyond four quarters. The expenditure column on the left side of the table shows an irregular pattern of response, mainly because of once-a-year adjustments in social security benefits and Federal pay. The effects on expenditures are always smaller than the effects on receipts.

The cumulative effects of a one percentage point increase in the inflation rate, shown on the right side of the table, grow steadily. At the end of four quarters, the higher inflation rate adds $4.4 billion to the high-employment surplus. At the end of 8 and 12 quarters, the corresponding increases are $8.7 billion and $13.3 billion, respectively.

Table 6 shows the results of a second simulation that incorporates automatic indexation of the Federal personal income tax—that is, automatic increases in personal exemptions and tax brackets in proportion to increases in a price index.[4] In other respects this simulation follows the same procedures as the simulation shown in table 5. Indexation would greatly reduce the response of personal tax receipts to inflation. However, it would not eliminate the tendency of inflation to move the Federal budget toward surplus. The cumulative effect on the high-employment surplus after 12 quarters is estimated at $8.5 billion, compared to $13.3 billion without indexation.

Inflation Effects: Methodology

For several reasons, the Federal budget responds automatically to price changes: (1) most taxes are

levied on dollar amounts of income, payrolls, or sales, and these tax bases tend to rise when the general price level rises; (2) several expenditures programs—social security is by far the largest—have been linked explicitly in recent years to movements in a price index; (3) other expenditures categories, such as medicare, although not linked explicitly to a price index, rise without any discretionary action when prices rise; and (4) Federal interest payments depend on interest rates which tend to change with changes in the rate of inflation. This section describes the ways in which these factors are quantified to yield a measure of the automatic effect of current and past inflation on the Federal budget. The discussion first covers the inflation adjustments to receipts, then those to expenditures.

Receipts

The sensitivity of Federal receipts to inflation depends on (1) the sensitivity of tax bases, such as corporate profits or wages and salaries, to inflation, and (2) the response of taxes to inflation-induced changes in these bases. The latter element can be expressed in the form of inflation elasticities—ratios of percent changes in tax receipts to percent changes in tax bases due to inflation—for each category of receipts. The basic approach, for each category of receipts, is summarized in equation (1).

$$(1) \qquad \Delta T_t^* = T B_{t-1} \left(\frac{\Delta B_t^*}{B_{t-1}} \right) \eta$$

where:

ΔT_t^* = the current change in high-employment receipts attributable to inflation;

T_{t-1} = last quarter's high-employment receipts;

ΔB_t^* = the current change in the high-employment tax base attributable to current and past inflation;

B_{t-1} = last quarter's high-employment tax base;

η = the inflation elasticity.

The equation shows that calculating the sensitivity of receipts to inflation, ΔT^*, requires estimates of inflation-induced changes in the tax base, ΔB^*, and of the inflation elasticity, η. The following sections explain how these estimates are constructed.

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4. The Economic Recovery Tax Act of 1981 provides for indexation of the personal income tax beginning in 1985. In the simulation, indexation is incorporated by assuming that the elasticity of personal income tax receipts with respect to inflation-induced changes in income is 1.0, instead of the much higher values (1.67 to 1.72) used in the first simulation.

Table 2.—High-Employment and Actual Unemployment Rate and GNP

Year and quarter	Unemployment rate — Percent			GNP — Billions of dollars		
	High-employment (1)	Actual (2)	Gap (1)-(2) (3)	High-employment (potential) (4)	Actual (5)	Gap (4)-(5)/(4) (6)
1955	4.0	4.4	−0.4	397.5	400.0	−0.6
1956	4.0	4.1	−.1	424.4	421.7	.6
1957	4.0	4.3	−.3	454.0	444.0	2.2
1958	4.0	6.8	−2.8	477.0	449.7	5.9
1959	4.1	5.5	−1.4	506.0	487.9	3.6
1960	4.2	5.5	−1.3	532.0	506.5	4.8
1961	4.2	6.7	−2.5	565.4	524.6	5.6
1962	4.2	5.5	−1.3	583.3	565.0	3.5
1963	4.2	5.7	−1.4	616.2	598.7	8.2
1964	4.2	5.2	−.9	649.7	637.7	1.8
1965	4.4	4.5	−.1	689.5	691.1	−.2
1966	4.5	3.9	.7	739.6	756.0	−2.2
1967	4.4	3.8	.8	789.9	799.6	−1.2
1968	4.6	3.6	.9	884.3	873.4	−2.2
1969	4.6	3.5	1.1	930.5	944.0	−1.5
1970	4.7	4.9	−.2	1,015.5	992.7	2.2
1971	4.8	5.9	−1.1	1,144.4	1,077.6	2.4
1972	4.9	5.6	−.7	1,191.6	1,185.9	.5
1973	4.9	4.9	0	1,305.3	1,326.4	−1.6
1974	5.0	5.6	−.6	1,468.8	1,434.2	2.3
1975	5.1	8.5	−3.4	1,657.9	1,549.2	6.6
1976	5.1	7.7	−2.6	1,909.5	1,718.0	4.7
1977	5.1	7.1	−2.0	1,973.4	1,918.0	3.8
1978	5.1	6.1	−1.0	2,189.2	2,156.1	1.5
1979	5.1	5.8	−.7	2,449.8	2,413.9	1.4
1980	5.1	7.1	−2.0	2,747.2	2,626.1	4.4
1981	5.1	7.6	−2.5	3,057.6	2,925.5	5.3
1955: I	4.0	4.7	−.7	388.7	388.2	.1
II	4.0	4.4	−.4	394.5	396.2	−.4
III	4.0	4.1	−.1	404.6	404.8	0
IV	4.0	4.2	−.2	406.9	411.0	−1.2
1956: I	4.0	4.0	0	413.2	412.8	.1
II	4.0	4.2	−.2	420.2	418.4	.4
III	4.0	4.1	−.1	428.5	423.5	1.3
IV	4.0	4.1	−.1	436.0	432.1	.9
1957: I	4.0	4.0	0	444.5	440.2	1.0
II	4.0	4.1	−.1	450.2	442.3	1.5
III	4.0	4.2	−.2	458.4	449.4	2.0
IV	4.0	4.3	−.3	463.0	444.0	4.1
1958: I	4.0	6.3	−2.3	465.8	436.8	6.2
II	4.0	7.4	−3.4	474.0	440.7	7.0
III	4.0	7.3	−3.3	480.7	453.9	5.6
IV	4.1	6.4	−2.3	487.1	467.0	4.1
1959: I	4.1	5.8	−1.7	495.4	477.0	3.7
II	4.1	5.1	−1.0	544.5	496.6	2.6
III	4.1	5.3	−1.2	506.7	486.0	4.1
IV	4.1	5.6	−1.5	515.5	495.0	4.0
1960: I	4.1	5.2	−1.0	528.2	506.9	3.1
II	4.1	5.2	−1.1	536.6	506.9	4.2
III	4.2	5.6	−1.4	535.5	506.0	4.1
IV	4.2	6.3	−2.1	540.9	504.8	6.7
1961: I	4.2	6.8	−2.6	544.2	506.2	6.7
II	4.2	7.0	−2.8	552.2	519.2	6.0
III	4.2	6.8	−2.6	559.4	528.2	5.6
IV	4.2	6.2	−2.0	565.1	542.8	4.0
1962: I	4.2	5.6	−1.4	574.7	554.2	3.6
II	4.2	5.5	−1.3	581.3	562.7	3.8
III	4.2	5.6	−1.4	587.8	568.9	3.2
IV	4.2	5.5	−1.3	597.1	574.3	3.8
1963: I	4.2	5.8	−1.6	605.3	582.0	3.8
II	4.2	5.7	−1.4	611.4	590.7	3.4
III	4.2	5.5	−1.2	618.9	601.3	2.8
IV	4.2	5.6	−1.3	629.2	612.4	2.7
1964: I	4.2	5.5	−1.3	639.9	625.3	1.8
II	4.3	5.2	−.9	644.9	634.0	1.7
III	4.4	5.0	−.6	654.6	642.8	1.8
IV	4.4	5.0	−.6	662.6	648.8	2.1
1965: I	4.4	4.9	−.5	674.8	668.8	.8
II	4.4	4.7	−.3	684.3	681.7	.4
III	4.4	4.4	.1	694.9	696.4	−.2
IV	4.4	4.1	.3	705.3	717.2	−1.7
1966: I	4.5	3.9	.6	719.2	738.4	−2.7
II	4.5	3.8	.7	734.4	750.0	−2.1
III	4.5	3.8	.7	745.8	760.8	−3.1
IV	4.5	3.7	.8	759.8	774.3	−2.0
1967: I	4.4	3.8	.6	771.5	780.7	−1.2
II	4.4	3.8	.5	781.1	788.6	−1.0
III	4.4	3.8	.6	796.7	805.7	−1.1
IV	4.5	3.9	.5	811.2	823.3	−1.5
1968: I	4.5	3.7	.7	828.8	841.2	−1.5
II	4.5	3.5	.9	846.4	867.2	−2.5
III	4.6	3.5	1.0	861.1	884.9	−2.8
IV	4.5	3.4	1.1	889.7	909.8	−2.2
1969: I	4.6	3.4	1.2	898.9	921.2	−2.5
II	4.6	3.4	1.1	918.9	937.4	−2.0
III	4.6	3.6	1.0	941.9	955.3	−1.4
IV	4.6	3.6	1.0	962.6	962.0	0
1970: I	4.6	4.2	.4	984.2	972.0	1.3
II	4.7	4.8	−.1	1,006.7	988.3	2.0
III	4.7	5.2	−.5	1,023.6	1,003.6	2.0
IV	4.7	5.8	−1.1	1,096.7	1,009.0	1.6
1971: I	4.7	5.9	−1.2	1,071.4	1,049.3	2.1
II	4.8	5.9	−1.1	1,086.9	1,066.9	2.3
III	4.8	6.0	−1.2	1,115.1	1,088.6	2.6
IV	4.8	6.0	−1.2	1,135.2	1,106.8	2.6
1972: I	4.8	5.8	−1.0	1,166.9	1,142.4	1.6
II	4.9	5.7	−.8	1,179.5	1,171.7	.7
III	4.9	5.5	−.7	1,206.0	1,196.1	.3
IV	4.9	5.3	−.4	1,226.2	1,238.5	−.6
1973: I	4.9	5.0	−.1	1,354.1	1,383.5	−3.3
II	4.9	4.9	0	1,367.1	1,307.6	−1.6
III	4.9	4.8	.1	1,390.3	1,337.7	−1.3
IV	5.0	4.8	.2	1,369.7	1,376.7	−1.3
1974: I	5.0	5.1	−.1	1,295.4	1,387.7	.8
II	5.0	5.2	−.2	1,441.8	1,433.8	1.2
III	5.0	5.6	−.6	1,491.4	1,451.6	2.7
IV	5.0	6.6	−1.6	1,546.8	1,473.9	4.7
1975: I	5.0	8.2	−3.2	1,599.9	1,479.8	7.5
II	5.1	8.9	−3.8	1,633.7	1,516.7	7.2
III	5.1	8.5	−3.4	1,676.6	1,578.5	5.9
IV	5.1	8.3	−3.2	1,721.4	1,621.8	5.8
1976: I	5.1	7.7	−2.7	1,751.2	1,672.0	4.5
II	5.1	7.6	−2.5	1,781.3	1,698.6	4.7
III	5.1	7.7	−2.6	1,815.5	1,729.0	4.9
IV	5.1	7.8	−2.7	1,842.5	1,772.5	4.4
1977: I	5.1	7.5	−2.4	1,904.4	1,839.1	3.4
II	5.1	7.1	−2.0	1,962.2	1,899.9	3.0
III	5.1	6.9	−1.8	1,994.7	1,958.4	2.2
IV	5.1	6.6	−1.5	2,042.3	1,988.6	2.6
1978: I	5.1	6.3	−1.2	2,065.4	2,032.4	2.7
II	5.1	6.0	−.9	2,159.7	2,128.4	1.4
III	5.1	6.0	−.9	2,218.8	2,190.5	1.3
IV	5.1	5.8	−.7	2,290.1	2,271.9	.8
1979: I	5.1	5.9	−.7	2,353.9	2,340.6	.6
II	5.1	5.7	−.6	2,416.1	2,374.6	1.7
III	5.1	5.8	−.7	2,479.9	2,444.1	1.4
IV	5.1	6.0	−.9	2,547.2	2,496.3	2.0
1980: I	5.1	6.3	−1.1	2,623.1	2,571.7	2.0
II	5.0	7.3	−2.2	2,704.4	2,564.8	5.2
III	5.1	7.6	−2.5	2,784.5	2,637.3	5.3
IV	5.1	7.5	−2.3	2,876.8	2,730.6	5.1
1981: I	5.1	7.4	−2.3	2,965.7	2,858.0	3.6
II	5.1	7.4	−2.3	3,038.8	2,885.6	4.9
III	5.1	7.4	−2.3	3,127.3	2,965.0	5.2
IV	5.1	8.3	−3.3	3,222.8	2,996.3	7.0

Source: Council of Economic Advisers, Bureau of Labor Statistics, and Bureau of Economic Analysis.

Table 3.—Actual and High-Employment Federal Receipts and Expenditures

[Billions of dollars, seasonally adjusted at annual rates]

Year and quarter	Actual						High-Employment					
	Receipts		Expenditures		Surplus or deficit(−)		Receipts		Expenditures		Surplus or deficit(−)	
	Amount	Percentage of GNP	Amount	Percentage of GNP	Amount	Percentage of GNP	Amount	Percentage of GNP [1]	Amount	Percentage of GNP [1]	Amount	Percentage of GNP [1]
1955	72.6	18.2	68.1	17.0	4.4	1.1	73.1	18.4	67.9	17.1	5.2	1.3
1956	78.0	18.5	71.9	17.1	6.1	1.4	79.8	18.8	71.9	16.9	7.9	1.9
1957	81.9	18.4	79.6	17.9	3.3	.5	85.4	18.9	79.5	17.5	6.1	1.4
1958	78.7	17.5	88.9	19.8	−10.3	−2.3	86.8	18.2	86.8	18.2	0	0
1959	89.8	18.4	91.0	18.7	−1.1	−.2	95.3	18.6	89.9	17.5	5.4	1.1
1960	96.1	19.0	93.1	18.4	3.0	.6	104.0	19.6	92.0	17.3	12.1	2.3
1961	98.1	18.7	101.9	19.4	−3.9	−.7	107.1	19.3	100.0	18.0	7.1	1.3
1962	106.2	18.6	110.4	19.5	−4.2	−.7	112.3	19.2	109.8	18.7	.5	.5
1963	114.4	19.2	114.2	19.1	.8	.1	120.5	19.8	113.0	19.3	7.4	1.2
1964	114.9	18.0	118.2	18.5	−3.3	−.5	118.6	18.2	117.5	18.1	1.1	.2
1965	124.3	18.0	123.8	17.9	.5	.1	124.5	18.1	123.7	17.9	.9	.1
1966	141.3	18.8	143.6	19.0	−1.5	−.2	138.4	18.7	144.0	19.5	−5.6	−.8
1967	150.5	18.8	168.7	20.5	−13.2	−1.7	149.0	18.9	164.1	20.8	−15.1	−1.9
1968	174.4	20.0	180.5	20.7	−6.0	−.7	170.2	19.9	181.2	21.2	−11.0	−1.3
1969	196.9	20.9	188.4	20.0	8.4	.9	194.3	20.9	189.4	20.4	4.9	.5
1970	191.9	19.8	204.3	20.6	−12.4	−1.2	199.7	19.7	204.3	20.1	−4.6	−.5
1971	198.6	18.4	220.6	20.5	−22.0	−2.0	206.7	18.7	218.0	19.7	−11.3	−1.0
1972	227.5	19.2	244.3	20.6	−16.8	−1.4	230.0	19.2	242.1	20.2	−12.1	−1.0
1973	258.5	19.5	264.3	19.9	−5.6	−.4	253.9	19.5	263.5	20.2	−9.5	−.7
1974	287.8	20.1	299.3	20.9	−11.6	−.8	298.2	20.8	298.5	20.3	−.3	0
1975	287.3	18.5	356.6	23.0	−69.8	−4.5	316.8	19.1	345.0	20.9	−29.1	−1.8
1976	331.8	19.8	384.8	22.4	−53.1	−3.1	356.3	19.5	373.6	20.7	−17.4	−1.0
1977	375.1	19.6	421.5	22.0	−46.4	−2.4	391.6	19.8	413.1	20.9	−21.7	−1.1
1978	431.5	20.0	460.7	21.4	−29.2	−1.4	441.2	20.2	456.3	20.8	−15.1	−.7
1979	494.4	20.5	509.3	21.1	−14.8	−.6	504.1	20.9	506.2	20.7	−2.1	−.1
1980	540.8	20.5	602.0	22.9	−61.2	−2.3	572.4	20.9	593.6	21.6	−21.3	−.7
1981	625.1	21.4	688.4	23.5	−63.3	−2.1	671.6	21.8	674.2	21.8	−2.6	−.1
1955:												
I	69.7	18.0	67.9	17.5	1.8	0.5	71.0	18.3	67.4	17.3	3.6	0.9
II	71.6	18.1	66.7	16.8	4.9	1.2	72.5	18.4	66.5	16.9	6.1	1.5
III	73.6	18.2	68.9	17.0	4.8	1.2	73.6	18.4	68.8	17.2	4.8	1.2
IV	75.5	18.4	69.0	16.8	6.5	1.6	75.3	18.5	68.9	17.0	6.4	1.6
1956:												
I	76.0	18.4	69.4	16.8	6.6	1.6	77.3	18.7	69.4	16.8	7.9	1.9
II	77.6	18.5	71.8	17.2	5.8	1.4	79.2	18.9	71.7	17.1	7.5	1.8
III	77.6	18.3	72.4	17.1	5.2	1.2	80.1	18.7	72.3	16.9	7.8	1.8
IV	80.5	18.6	74.3	17.2	6.2	1.5	82.6	18.9	74.1	17.0	8.5	1.9
1957:												
I	82.7	18.8	78.1	17.7	4.6	1.0	84.9	19.1	78.1	17.6	6.8	1.5
II	82.6	18.7	78.8	18.0	3.8	.8	85.7	19.0	79.9	17.7	6.9	1.3
III	82.6	18.4	79.8	17.8	3.8	.8	86.0	18.8	79.7	17.4	6.3	1.4
IV	79.6	17.9	81.0	18.2	−1.3	−.3	85.8	18.5	80.4	17.4	5.5	1.2
1958:												
I	76.0	17.4	83.5	19.1	−7.5	−1.7	85.6	18.3	81.8	17.5	3.8	.8
II	75.9	17.2	87.8	19.9	−11.9	−2.7	85.6	18.1	85.1	18.0	.6	.1
III	79.6	17.5	91.6	20.2	−12.1	−2.7	87.2	18.1	89.1	18.5	−1.9	−.4
IV	83.0	17.8	93.0	19.9	−10.0	−2.1	88.7	18.2	91.3	18.7	−2.6	−.5
1959:												
I	87.6	18.4	90.5	19.0	−2.9	−.6	92.9	18.8	89.2	18.0	3.7	.8
II	91.6	18.7	89.9	18.3	1.6	.3	95.6	19.0	89.1	17.7	6.5	1.3
III	89.8	18.4	91.5	18.7	−1.7	−.3	96.1	18.9	90.6	17.8	5.5	1.1
IV	90.4	18.3	91.9	18.6	−1.5	−.3	96.7	18.8	90.8	17.6	5.9	1.1
1960:												
I	97.8	19.3	90.2	17.8	7.6	1.5	103.2	19.7	89.4	17.1	13.8	2.6
II	96.4	19.0	92.3	18.2	4.2	.8	103.4	19.6	91.4	17.3	12.0	2.3
III	95.7	18.8	94.2	18.6	1.4	.3	104.1	19.4	93.1	17.4	11.1	2.1
IV	94.6	18.7	95.7	19.0	−1.1	−.2	105.4	19.5	94.0	17.4	11.4	2.1
1961:												
I	94.5	18.8	98.9	19.5	−4.3	−.8	105.4	19.3	96.8	17.8	8.5	1.6
II	96.6	18.8	101.7	19.6	−5.1	−1.0	106.3	19.2	99.4	18.0	6.9	1.2
III	98.9	18.7	102.8	19.5	−3.9	−.7	108.0	19.3	100.8	18.0	7.1	1.3
IV	102.2	18.8	104.4	19.2	−2.2	−.4	108.7	18.2	102.9	18.2	5.9	1.0
1962:												
I	103.3	18.6	109.0	19.7	−5.6	−1.0	109.3	19.0	107.8	18.8	1.5	.3
II	105.1	18.7	109.2	19.4	−4.1	−.7	110.8	19.0	108.1	18.6	2.7	.5
III	107.5	18.9	110.7	19.5	−3.2	−.6	112.3	19.3	109.6	18.6	3.9	.6
IV	108.8	18.9	112.8	19.6	−4.0	−.7	115.8	19.4	111.7	18.7	4.1	.7
1963:												
I	111.6	19.2	113.5	19.5	−1.9	−.3	118.9	19.6	112.3	18.5	6.6	1.1
II	114.1	19.3	112.8	19.0	1.9	.3	120.6	19.7	111.0	18.2	9.6	1.6
III	115.3	19.2	114.1	19.0	1.2	.2	120.6	19.5	113.1	18.3	7.6	1.2
IV	116.6	19.0	116.8	19.1	−.2	0	121.8	19.4	115.8	18.4	6.1	1.0
1964:												
I	116.4	18.5	118.5	18.9	−2.0	−.5	119.0	18.7	117.4	18.4	1.6	.2
II	112.1	17.7	118.8	18.7	−6.7	−1.1	115.3	17.8	118.0	18.3	−2.7	−.4
III	115.2	17.9	117.6	18.3	−2.4	−.4	118.8	18.1	117.0	17.9	1.8	.5
IV	117.0	18.0	118.0	18.2	−1.0	−.2	121.2	18.3	117.5	17.7	3.7	.6
1965:												
I	122.7	18.3	118.2	17.7	4.6	.7	124.6	18.5	117.8	17.5	7.0	1.0
II	124.4	18.2	120.4	17.7	3.9	.6	125.6	18.4	120.2	17.6	5.5	.8
III	122.1	17.7	125.1	18.1	−3.0	−.4	123.2	17.7	125.1	18.1	−2.8	−.4
IV	127.1	17.7	130.5	18.2	−3.4	−.5	124.6	17.7	130.6	18.5	−6.1	−.9

Table 3.—Actual and High-Employment Federal Receipts and Expenditures—Continued

[Billions of dollars, seasonally adjusted at annual rates]

Year and quarter	Actual						High-Employment					
	Receipts		Expenditures		Surplus or deficit (—)		Receipts		Expenditures		Surplus or deficit (—)	
	Amount	Percentage of GNP	Amount	Percentage of GNP	Amount	Percentage of GNP	Amount	Percentage of GNP [1]	Amount	Percentage of GNP [1]	Amount	Percentage of GNP [1]
1966:												
I	136.5	18.5	135.6	18.4	.6	.1	132.1	18.4	136.1	18.5	-4.0	-.6
II	141.3	18.8	140.0	18.7	1.3	.2	138.0	18.8	140.3	19.1	-3.3	-.3
III	143.7	18.9	146.9	19.3	-3.2	-.4	140.6	18.9	147.3	19.8	-6.8	-.9
IV	145.9	18.9	151.8	19.6	-5.9	-.8	142.8	18.5	152.3	20.0	-9.5	-1.2
1967:												
I	147.0	18.8	159.9	20.5	-12.9	-1.7	146.6	18.9	160.3	20.8	-14.7	-1.9
II	147.6	18.7	160.9	20.4	-13.2	-1.7	146.7	18.8	161.4	20.7	-14.7	-1.9
III	151.5	18.8	165.1	20.5	-13.6	-1.7	149.9	18.8	165.6	20.8	-15.7	-2.0
IV	155.9	18.9	168.9	20.5	-13.0	-1.6	153.8	18.9	169.3	20.9	-15.5	-1.9
1968:												
I	168.6	19.4	173.4	20.6	-3.8	-1.2	161.3	19.5	173.9	21.0	-12.6	-1.5
II	168.3	19.5	180.9	20.9	-12.2	-1.4	164.2	19.4	181.6	21.5	-17.4	-2.1
III	180.0	20.3	182.6	20.6	-2.6	-.3	174.4	20.2	183.3	21.3	-8.9	-1.0
IV	185.4	20.6	185.7	20.6	.3	0	181.1	20.6	186.0	21.1	-4.9	-.6
1969:												
I	195.4	21.2	184.0	20.0	11.4	1.2	190.1	21.1	185.0	20.6	5.1	.6
II	198.6	21.2	187.1	20.0	11.5	1.2	194.4	21.2	188.0	20.5	6.3	.7
III	199.3	20.5	192.8	19.9	6.5	.7	193.9	20.6	190.7	20.2	3.2	.3
IV	197.2	20.5	192.9	20.1	4.3	.4	199.0	20.7	193.8	20.1	5.1	.5
1970:												
I	192.7	19.8	193.8	19.9	-1.8	-.1	198.0	20.1	194.8	19.8	3.1	.3
II	194.3	19.7	207.4	21.0	-13.1	-1.3	201.7	20.0	207.9	20.7	-6.3	-.6
III	190.7	19.0	205.7	20.5	-14.9	-1.5	197.6	19.8	205.4	20.1	-7.8	-.8
IV	188.8	18.8	216.8	20.8	-20.4	-2.0	201.6	18.8	209.1	20.0	-7.6	-.7
1971:												
I	194.9	18.8	213.4	20.3	-18.5	-1.8	201.9	18.8	211.3	19.7	-9.4	-.9
II	197.1	18.4	220.8	20.7	-23.7	-2.2	205.8	18.7	218.2	19.9	-12.5	-1.2
III	195.6	18.2	222.3	20.5	-26.7	-2.2	207.0	18.6	219.5	19.7	-12.4	-1.1
IV	203.7	18.4	225.9	20.4	-22.2	-2.0	212.4	18.7	223.0	19.9	-10.6	-.9
1972:												
I	223.0	19.5	235.8	20.6	-12.8	-1.1	229.1	19.7	233.0	20.1	-3.9	-.3
II	224.2	19.1	244.0	20.8	-19.8	-1.7	227.2	19.3	241.4	20.5	-14.2	-1.2
III	227.6	19.0	238.1	19.8	-10.5	-.9	229.5	19.2	236.1	19.7	-6.6	-.5
IV	235.3	19.1	259.4	21.0	-24.1	-2.0	234.2	19.1	257.8	21.0	-23.6	-1.9
1973:												
I	252.1	19.5	260.7	20.2	-8.6	-.7	245.0	19.5	259.4	20.7	-14.4	-1.1
II	255.8	19.5	262.8	20.1	-7.1	-.5	251.1	19.5	261.8	20.9	-10.7	-.8
III	258.7	19.4	262.3	19.6	-2.6	-.2	256.0	19.4	261.8	19.8	-5.8	-.4
IV	267.2	19.4	271.2	19.7	-4.0	-.3	263.7	19.4	270.9	19.9	-7.2	-.5
1974:												
I	274.8	19.8	279.6	20.1	-4.7	-.3	277.9	19.9	279.4	20.0	-1.5	-.1
II	284.6	20.0	295.2	20.7	-10.6	-.7	290.5	20.2	294.7	20.4	-4.2	-.3
III	296.6	20.4	305.0	21.0	-8.4	-.6	308.4	20.7	304.2	20.4	4.1	.3
IV	296.3	20.0	317.6	21.5	-23.4	-1.5	316.0	20.4	315.7	20.4	.3	0
1975:												
I	288.2	19.5	333.6	22.5	-45.5	-3.1	321.7	20.1	327.6	20.5	-5.8	-.4
II	264.5	16.8	353.6	22.4	-89.0	-6.5	283.4	17.8	341.8	20.9	-58.4	-3.6
III	298.7	18.9	355.3	22.1	-66.6	-4.2	325.1	19.5	352.7	20.0	-26.5	-1.6
IV	307.9	19.0	374.0	23.1	-66.1	-4.1	325.9	19.5	351.6	21.0	-25.7	-1.5
1976:												
I	320.0	19.1	376.3	22.5	-56.3	-3.4	342.9	19.6	363.9	20.8	-21.0	-1.2
II	327.5	19.5	375.7	22.1	-48.2	-2.8	351.6	19.7	364.2	20.4	-12.7	-.7
III	335.9	19.4	387.4	22.4	-51.5	-3.0	361.5	19.9	376.7	20.7	-15.2	-.8
IV	343.6	19.4	399.9	22.6	-56.3	-3.2	369.2	19.8	389.8	20.9	-20.5	-1.1
1977:												
I	364.9	19.8	403.1	21.9	-38.1	-2.1	384.5	20.2	393.3	20.7	-8.9	-.5
II	370.2	19.5	412.9	21.8	-42.7	-2.3	387.4	19.8	404.3	20.7	-16.9	-.9
III	376.5	19.8	428.6	22.6	-52.2	-2.7	388.6	19.5	420.8	21.1	-31.2	-1.6
IV	389.0	19.6	441.5	22.2	-52.5	-2.6	404.5	19.5	434.2	21.3	-29.7	-1.5
1978:												
I	398.6	19.6	447.4	22.0	-48.8	-2.4	414.4	19.8	441.7	21.1	-27.3	-1.3
II	423.8	19.9	451.1	21.2	-27.4	-1.3	431.6	20.0	446.7	20.7	-14.2	-.7
III	440.9	20.1	463.7	21.2	-22.8	-1.0	449.3	20.2	459.5	20.7	-10.2	-.5
IV	463.7	20.4	480.6	21.2	-17.9	-.8	468.3	20.4	477.1	20.8	-8.8	-.4
1979:												
I	477.9	20.4	490.4	20.9	-12.5	-.5	481.0	20.4	484.8	20.5	-3.8	-.2
II	485.9	20.5	494.0	20.8	-8.1	-.3	497.1	20.6	491.8	20.8	5.8	.2
III	500.6	20.5	515.8	21.1	-16.2	-.6	510.4	20.6	513.1	20.7	-2.7	-.1
IV	514.0	20.6	538.6	21.6	-24.5	-1.0	527.9	20.7	535.5	21.0	-7.7	-.3
1980:												
I	528.4	20.5	564.7	22.0	-36.3	-1.4	542.3	20.7	560.6	21.4	-18.3	-.7
II	520.8	20.3	587.3	22.9	-66.5	-2.6	557.6	20.5	579.3	21.4	-21.7	-.8
III	540.8	20.5	615.0	23.3	-74.2	-2.8	580.1	20.8	604.4	21.7	-24.2	-.9
IV	573.2	21.0	641.1	23.5	-67.9	-2.5	613.5	21.3	630.8	21.9	-16.8	-.6
1981:												
I	617.4	20.6	664.0	22.3	-46.6	-1.6	650.2	21.3	651.4	22.0	-1.9	0
II	621.0	20.5	668.2	22.3	-47.2	-1.6	693.3	21.3	682.8	21.5	10.5	.3
III	636.3	21.5	684.0	23.4	-55.7	-1.9	684.7	21.9	680.4	21.5	4.3	.1
IV	627.7	20.9	727.2	24.8	-99.5	-3.3	688.3	21.4	712.2	22.1	-24.0	-.7

[1] Percentage of potential GNP.

Table 4.—Sources of Quarterly Changes in High-Employment Receipts, Expenditures, and Surplus or Deficit

[Billions of dollars, seasonally adjusted at annual rates]

Year and quarter	Total			Due to automatic inflation effects			Due to discretionary policy changes and other factors		
	Receipts	Expenditures	Surplus or deficit (−)	Receipts	Expenditures	Surplus or deficit (−)	Receipts	Expenditures	Surplus or deficit (−)
1955:									
II	1.5	−0.9	2.5	0.7	0	0.7	0.8	−1.0	1.8
III	1.1	2.9	−1.8	.6	0	.5	.6	2.9	−1.3
IV	1.7	.1	1.6	.4	0	.4	1.2	.1	1.2
1956:									
I	2.0	.5	1.5	.8	0	.8	1.2	.5	.7
II	1.9	3.8	−.4	.8	0	.8	1.1	2.3	−1.2
III	.9	.6	.3	1.3	0	1.3	−.4	.6	−1.0
IV	2.5	1.8	.7	.8	0	.8	1.6	1.8	−.2
1957:									
I	2.3	4.0	−1.7	1.1	0	1.1	1.2	4.0	−2.9
II	.8	1.7	−.9	−.2	0	−.2	.9	1.6	−.7
III	.3	−.1	.4	.8	0	.8	−.5	−.1	−.5
IV	−.2	.7	−.8	−.5	0	−.5	.3	.7	−.3
1958:									
I	−.2	1.4	−1.7	.1	0	0	−.3	1.6	−1.3
II	0	3.3	−3.3	−.2	0	−.2	.1	3.3	−3.2
III	1.6	4.0	−2.4	.7	0	.7	1.0	4.0	−3.0
IV	1.5	2.1	−.6	.4	0	.4	1.1	2.1	−1.0
1959:									
I	4.2	−2.0	6.2	1.2	0	1.2	3.0	−2.0	5.0
II	2.7	−.1	2.6	.9	0	.9	1.7	−.2	1.9
III	.5	1.5	−1.0	.1	0	.1	.4	1.5	−1.1
IV	.6	.2	.4	−.2	0	−.2	.8	.2	.7
1960:									
I	6.5	−1.4	7.9	.6	0	.6	5.9	−1.4	7.3
II	.7	2.0	−1.5	−.2	0	−.2	.9	2.0	−1.6
III	.7	1.7	−.9	−.4	0	−.3	1.1	1.6	−1.2
IV	1.3	.9	.3	−.2	0	−.3	1.5	.9	.6
1961:									
I	0	2.8	−2.8	−.7	0	−.7	.6	2.7	−2.1
II	.9	2.6	−1.7	.6	0	.6	.3	2.6	−2.3
III	1.7	1.4	.2	.8	0	.8	.9	1.5	−.6
IV	.9	2.1	−1.2	.1	0	.1	.7	2.0	−1.3
1962:									
I	.6	4.9	−4.4	1.4	0	1.3	−.8	4.9	−5.7
II	1.5	.2	1.2	.4	0	.4	1.1	.3	.8
III	2.6	1.5	1.1	−.1	0	−.1	2.6	1.4	1.2
IV	2.5	2.1	.3	.8	0	.9	1.6	2.1	−.5
1963:									
I	3.1	.6	2.5	.6	0	.6	2.4	.5	1.9
II	1.7	−1.1	2.9	−.3	0	−.3	2.0	−1.2	3.2
III	0	2.1	−1.9	.1	0	.1	0	2.0	−2.0
IV	1.2	2.7	−1.5	1.3	.1	1.2	−.1	2.6	−2.7
1964:									
I	−3.8	1.6	−4.5	.3	0	.2	−4.1	1.6	−4.7
II	−3.7	.6	−4.3	.2	0	.2	−3.9	.6	−4.5
III	2.6	−1.8	4.5	.7	0	.7	2.7	−1.0	3.7
IV	2.4	.6	1.9	.2	0	.2	2.2	.5	1.7
1965:									
I	3.6	.3	3.3	1.5	0	1.4	2.1	.3	1.9
II	.8	2.4	−1.5	.7	0	.7	−.1	2.4	−2.2
III	−2.4	5.9	−8.3	.8	0	.8	−3.2	5.9	−9.1
IV	1.4	4.5	−3.3	.6	.1	.5	.7	4.5	−3.7
1966:									
I	7.5	5.5	2.1	1.9	.1	1.7	5.6	5.4	.4
II	5.9	4.2	1.7	2.3	0	2.2	3.6	4.2	−.6
III	2.6	7.0	−4.5	.8	.1	.6	1.9	6.9	−5.0
IV	2.3	5.0	−2.7	1.5	.1	1.4	.8	4.9	−4.1
1967:									
I	2.8	8.0	−5.2	.7	.2	.6	2.1	7.8	−5.7
II	1.1	1.1	0	0	.1	−.1	1.1	.9	.2
III	3.2	4.2	−1.0	1.6	.1	1.5	1.6	4.1	−2.5
IV	3.9	3.7	.2	2.0	.1	1.9	1.8	3.6	−2.0
1968:									
I	7.5	4.6	2.9	2.8	.1	2.7	4.7	4.5	.2
II	2.9	7.7	−4.8	2.5	.3	2.3	.4	7.4	−7.0
III	10.3	1.7	8.4	1.2	.1	1.0	9.0	1.6	7.4
IV	6.7	2.7	4.1	2.9	.2	2.7	3.8	2.5	1.4
1969:									
I	9.0	−1.0	10.0	2.4	.3	2.1	6.6	−1.3	7.9
II	4.3	3.0	1.2	3.0	.3	2.7	1.3	2.7	−1.5
III	−.5	2.7	−3.1	4.0	.2	3.8	−4.5	2.5	−7.0
IV	5.1	3.1	1.9	2.8	.2	2.6	2.2	2.9	.7
1970:									
I	−1.0	1.0	−2.0	3.0	.6	2.4	−4.0	.4	−4.4
II	8.7	13.1	−4.4	2.5	.1	2.4	1.2	13.0	−11.8
III	−4.1	−2.5	−1.5	.7	−.4	1.1	−4.7	−2.2	−2.6
IV	4.0	3.7	.2	2.7	.7	1.9	1.3	3.0	−1.7
1971:									
I	.3	2.2	−1.8	3.7	2.9	.8	−3.3	−.7	−2.6
II	3.4	6.9	−3.5	3.3	.3	3.0	.1	6.6	−6.5
III	1.7	1.2	.5	.9	.2	.7	.8	1.0	−.3
IV	5.4	3.6	1.8	1.1	.4	.7	4.3	3.2	1.1
1972:									
I	18.7	10.0	8.7	3.2	2.9	.3	13.4	7.1	6.3
II	−1.9	8.4	−10.3	1.1	−.5	1.6	−2.9	8.9	−11.9
III	2.3	−5.3	7.6	1.4	.5	.9	.9	−5.8	6.7
IV	4.7	21.7	−17.0	3.5	3.1	.4	1.1	18.6	−17.4

Table 4.—Sources of Quarterly Changes in High-Employment Receipts, Expenditures, and Surplus or Deficit—Continued

[Billions of dollars, seasonally adjusted at annual rates]

Year and quarter	Total			Due to automatic inflation effects			Due to discretionary policy changes and other factors		
	Receipts	Expenditures	Surplus or deficit (−)	Receipts	Expenditures	Surplus or deficit (−)	Receipts	Expenditures	Surplus or deficit (−)
1973:									
I	10.8	1.6	9.2	4.3	.5	3.8	6.5	1.1	5.4
II	6.1	2.4	3.7	5.8	1.3	4.5	.3	1.1	−.8
III	4.5	0	4.9	5.4	1.4	4.0	−.4	−1.4	1.0
IV	7.7	9.1	−1.4	7.2	8.3	3.9	.4	5.7	−5.3
1974:									
I	14.2	8.6	5.6	5.6	1.7	4.0	8.6	6.9	1.7
II	12.6	15.3	−2.6	9.0	1.9	7.1	3.7	13.4	−9.7
III	17.9	9.6	8.3	10.1	2.5	7.7	7.8	7.1	.6
IV	7.6	11.4	−3.8	11.6	4.2	7.8	−3.9	7.3	−11.3
1975:									
I	5.7	11.9	−6.1	9.9	2.4	7.6	−4.2	9.5	−13.7
II	−38.3	14.3	−52.6	2.3	−1.4	3.7	−40.6	15.6	−56.3
III	62.7	10.9	51.9	4.9	6.8	−2.8	28.8	4.1	24.7
IV	9.6	8.9	.8	6.1	2.5	3.6	3.6	6.4	−2.8
1976:									
I	7.0	2.3	4.7	1.5	−.5	2.0	5.5	2.8	2.7
II	6.6	.3	6.3	1.4	1.4	0	7.2	−1.1	8.3
III	10.0	12.5	−2.5	4.1	6.2	−2.1	5.9	6.2	−.4
IV	7.7	13.1	−5.4	7.5	3.7	3.8	.2	9.4	−9.2
1977:									
I	15.3	3.5	11.7	6.7	1.9	4.8	8.5	1.7	6.9
II	2.9	11.0	−8.0	8.4	3.0	5.4	−5.4	8.0	−13.5
III	2.2	16.5	−14.3	5.7	6.1	−.4	−3.5	10.4	−13.9
IV	14.9	13.4	1.5	7.1	4.6	2.5	7.8	8.8	−1.0
1978:									
I	9.9	7.6	2.5	6.2	1.3	5.0	3.7	6.2	−2.5
II	28.2	6.0	18.0	15.6	3.7	11.9	2.5	1.4	1.1
III	16.7	12.8	4.8	10.9	7.7	3.2	6.8	5.9	.8
IV	19.0	17.6	1.4	14.7	8.2	6.6	4.3	11.5	−7.2
1979:									
I	12.7	7.8	5.0	11.1	2.6	8.6	1.6	5.2	−3.6
II	16.1	6.4	9.6	10.4	.7	9.8	5.7	5.8	−.3
III	12.2	21.3	−8.5	10.2	12.5	−2.5	2.1	8.1	−6.0
IV	17.4	22.4	−5.0	11.9	6.1	5.8	5.5	16.3	−10.8
1980:									
I	14.5	25.1	−10.6	14.8	3.1	11.6	−.3	22.0	−22.2
II	15.2	18.7	−3.4	16.4	3.5	12.9	−1.1	15.1	−16.3
III	22.6	25.1	−2.5	15.5	19.2	−3.7	7.1	5.9	1.2
IV	33.4	25.9	7.4	19.1	11.6	7.5	14.3	14.3	0
1981:									
I	36.7	21.1	15.5	17.1	3.9	13.2	19.6	17.2	2.3
II	18.1	1.4	11.9	8.8	.8	8.0	4.4	.5	3.8
III	21.4	27.6	−6.5	17.8	20.2	−2.4	3.5	7.5	−3.9
IV	8.6	31.8	−23.1	18.8	9.9	8.9	−16.2	23.0	−38.2

Income share equations.—Inflation-induced changes in the various tax bases are estimated using a set of equations that express changes in components of GNP as a function of changes in the GNP gap, changes in the GNP implicit price deflator, and the growth of potential GNP. The components of GNP for which income share equations are estimated are:

1. Wages and salaries
2. Other labor income and employer contributions for social insurance
3. Corporate profits with inventory valuation adjustment (IVA) and capital consumption adjustment (CCAdj)
4. Proprietors' income with IVA and CCAdj
5. Rental income of persons with CCAdj, and net interest
6. GNP less national income.

The equations are not based on a theory of income shares, but are simply a way of representing the empirical relation of shares to cyclical fluctuations, to inflation, and to the non-cyclical rate of growth of the economy.

The dependent variable in each share equation is a change in an income component divided by lagged GNP. The explanatory variables are the percent change in potential real GNP, changes in current and past GNP gaps, and percent changes in current and past values of the GNP deflator. Algebraically,

$$(2) \quad \frac{\Delta S_t}{GNP_{t-1}} = a\left(\frac{\Delta GNPK72_t}{GNPK72_{t-1}}\right)$$

$$+ b_1(\Delta GNPGAP_t) + b_2 \sum_{i=1}^{4}(\Delta GNPGAP_{t-i})$$

$$+ c_1\left(\frac{\Delta PGNP_t}{PGNP_{t-1}}\right) + c_2 \sum_{i=1}^{4}\left(\frac{\Delta PGNP_{t-i}}{PGNP_{t-i-1}}\right)$$

where:

S = an income share (e.g., wages and salaries);
GNP = GNP in current dollars;
GNPK72 = potential GNP in 1972 dollars;
GNPGAP = the GNP gap;
PGNP = the implicit price deflator for GNP;
a, b_1, b_2, c_1, c_2 = estimated coefficients;
t = the current quarter; t-1 a one-quarter lag, etc.

Table 7 shows the income share equations. The equations are estimated by ordinary least squares except for the coefficients of the change in potential GNP. Because the estimated percentage change in potential GNP is constant over long periods of time, and because uncertainty about the true change in potential GNP is large relative to the variance of the change, ordinary least squares estimates of the coefficients of changes in potential GNP were felt to be unreliable. Coefficients of potential GNP were estimated by taking the mean of each

change-in-share variable for the period 1956:1 to 1965:3, and dividing it by the sum of the means for all the shares so that the coefficients add to 1.0. Each coefficient of potential GNP is thus proportional to the 1956–65 rate of growth of each share. The period 1956–65 was selected because there was little inflation during the period and because the economy was close to high-employment at its beginning and at its end. It was felt that changes in shares during this period were likely to reflect the effects of growth in potential GNP rather than inflation or cyclical changes.

The income share equations used in the November 1980 article (p. 32) in calculating the high-employment budget related shares to current and past GNP gaps but not to inflation rates. The responses to GNP gaps in the new and old equations are quite similar. The responses to current and lagged inflation rates in the new equations are statistically significant in a number of cases and quantitatively important in many cases.

The wage and salary response to inflation indicates that wages and salaries approximately maintain their share of GNP in the face of an increase in the rate of inflation; the five-quarter sum of coefficients of 0.5096 is similar to the 1979 average share of wages and salaries in GNP of 0.5120.[5] The corporate profits response to inflation, like the corporate profits response to cyclical changes measured by the GNP gap, indicates an initial overshooting; in the case of prices the coefficient of the current rate of inflation of 0.2047 is larger than the 1979 corporate profits share of 0.0815. The coefficient of −0.0399 on inflation rates during the four previous quarters indicates that corporate profits fall back towards their earlier share when a new inflation rate persists for five quarters.

The coefficients of potential GNP add, by construction, to 1.0, as the bottom line of table 7 shows. In addition, the coefficients of current inflation add to approximately 1.0, the coefficients of past inflation to approximately zero, the coefficients of changes in the gap to approximately

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5. The five-quarter sum of coefficients includes the 0.4476 coefficient for the current quarter plus the 0.0155 coefficient for each of the preceding four quarters.

Table 5.—Simulation of the Effect of a One Percentage Point Increase in the Inflation Rate on the High-Employment Budget

[Billions of dollars]

Number of quarters after the increase in inflation (first quarter = 1977:2)	Quarter-to-quarter changes			Cumulative changes		
	Receipts	Expenditures	Surplus or deficit (−)	Receipts	Expenditures	Surplus or deficit (−)
1	1.8	0.8	1.0	1.8	0.8	1.0
2	1.9	.5	1.4	3.7	1.3	2.4
3	1.8	.9	.9	5.6	2.2	3.3
4	1.5	.5	1.1	7.0	2.7	4.4
5						
6	1.7	.4	1.4	16.8	5.1	8.7
8						
12	2.0	.2	1.7	21.5	8.1	13.5

Table 6.—Simulation of the Effect of a One Percentage Point Increase in the Inflation Rate on the High-Employment Budget, With Indexation of the Personal Income Tax

[Billions of dollars]

Number of quarters after the increase in inflation (first quarter = 1977:2)	Quarter-to-quarter changes			Cumulative changes		
	Receipts	Expenditures	Surplus or deficit (−)	Receipts	Expenditures	Surplus or deficit (−)
1	1.5	0.8	0.8	1.5	0.8	0.8
2	1.6	.5	1.1	3.1	1.3	1.8
3	1.5	.9	.5	4.6	2.2	2.4
4	1.2	.5	.7	5.8	2.7	3.1
5						
6	1.3	.3	1.0	10.9	5.1	5.8
8						
12	1.5	.3	1.2	16.5	8.1	8.5

Table 7.—Income Share Equations

Change in income component GNP[-1]	Coefficients					F	Durbin-Watson statistic	1979 share of GNP
	$\Delta GNPGAP_t$	$\sum_{i=1}^{4}(\Delta GNPGAP_{t-i})$	$\frac{\Delta PGNP_t}{PGNP_{t-i}}$	$\sum_{i=1}^{4}\left(\frac{\Delta PGNP_{t-i}}{PGNP_{t-i}}\right)$	$\frac{\Delta GNPK72}{GNPK72_{t-1}}$			
Wages and salaries	−0.3506 (−14.2)	−0.0623 (−5.1)	0.4476 (7.1)	0.0155 (0.9)	0.5124	0.78	1.8	0.5120
Other labor income and employer contributions for social insurance	−.0593 (−6.7)	−.0130 (−3.5)	.0599 (2.7)	.0179 (3.0)	.0754	.69	2.4	.0932
Corporate profits with IVA and CCAdj	−.4719 (−19.2)	.0672 (5.5)	.2047 (3.2)	−.0399 (−2.3)	.1054	.79	1.8	.0815
Proprietors' income with IVA and CCAdj	−.0816 (−5.1)	−.0069 (−0.9)	−.0159 (−0.4)	.0130 (1.2)	.0483	.16	2.7	.0645
Rental income of persons with CCAdj, and net interest	−.0063 (0.0)	−.0035 (−0.5)	.0512 (2.7)	.0015 (0.2)	.0791	.23	1.7	.0729
GNP less national income	−.6812 (−2.0)	.0272 (2.5)	.2245 (3.3)	−.0055 (−0.3)	.1194	.80	2.2	.1967
Sum of coefficients	−1.0502	.0007	1.0081	.0024	1.0000			1.0000

Definitions of Variables:
  GNP: current-dollar GNP at annual rates.
  GNPK72: GNP in 1972 dollars at annual rates.
  PGNP: the implicit price deflator for GNP, 1972=100.
  GNPK72: potential GNP in 1972 dollars, at annual rates.
  GNPGAP: (GNPK72−GNPK72/GNPK72.

Estimation period: 1956:2 to 1981:2.
Numbers in parentheses are t-statistics.

−1.0, and the coefficients of past changes in the gap to approximately zero. The mathematical reason for these results is complex. It has to do with the fact that the percent change in GNP from quarter to quarter can be expressed in two ways, which must equal one another. One is as the sum of all of the dependent variables in the share equations, because the change in wages and salaries plus the change in corporate profits plus all the other changes in shares is equal to the change in GNP. The other is as the percent change in potential GNP plus the percent change in prices minus the change in the GNP gap.[6]

Supplementing these income share equations are special equations for the corporate profits IVA and CCAdj, dividends, personal interest income less net interest, and Federal Reserve profits taxes. The equations for the corporate profits IVA and CCAdj are necessary to convert the measure of corporate profits estimated in the share equations to book profits, which is used as the tax base for the corporate income tax. The dividends and interest equations are necessary to estimate adjusted personal income, which is used as the tax base for personal income tax and nontax payments (adjusted personal income is defined below). The Federal Reserve profits tax equation is used to estimate the impact of inflation on Federal Reserve profits taxes.

The IVA is specified to depend on current and two quarters of lagged inflation rates. The CCAdj is specified to depend on the current GNP gap and a distributed lag of 18 quarters of inflation rates. Dividends are estimated using a longrun elasticity of dividends with respect to book profits. The equation for the difference between personal interest income and net interest is specified in the same way as the income share equations. The Federal Reserve profits tax is specified to depend on a distributed lag of four quarters of inflation rates.

6. GNP can be factored into real potential GNP, the GNP gap, and prices as follows:

$$GNP_t = GNPPK72_t(1 - GNPGAP_t)PGNP_t$$

The percent change in GNP is approximately equal to the sum of the percent changes of these three factors, or:

$$\frac{\Delta GNP_t}{GNP_{t-1}} \approx \frac{\Delta GNPPK72_t}{GNPPK72_{t-1}} + \frac{\Delta(1 - GNPGAP_t)}{(1 - GNPGAP_{t-1})} + \frac{\Delta PGNP_t}{PGNP_{t-1}}$$

The middle term, finally, is approximately equal to $-\Delta GNPGAP$.

All of these equations are used in two ways. The effects of current and lagged GNP gap terms give differences between actual and high-employment income shares. The effects of current and lagged price terms give inflation-induced changes in income shares.

Personal taxes.—The tax base for personal taxes is approximated by adjusted personal income, which is the sum of wages and salaries, proprietors' income with IVA and CCAdj, rent with CCAdj, net interest, the difference between personal interest income and net interest, and dividends. Personal tax receipts increase more than in proportion to increases in this tax base. As described in the November 1980 article (pp. 33–35), the elasticity of personal taxes with respect to the tax base depends on (1) the elasticity of taxes with respect to the number of tax returns and (2) the elasticity of taxes per return with respect to adjusted gross income per return, with each elasticity calculated separately for single and for nonsingle returns. The total cyclical elasticity of personal taxes was expressed as a weighted combination of the four component elasticities.

Inflation primarily affects income per return rather than the number of returns, and therefore the inflation elasticity of personal taxes is estimated as a weighted average of the two elasticities—one for single and one for nonsingle returns—of taxes per return with respect to adjusted gross income per return. Weights are based on shares of tax payments. The resulting inflation elasticities, reported in table 8, are higher than the cyclical elasticities.

Corporate profits taxes.—The tax base for corporate profits taxes is approximated by (1) modified profits, which is book profits less Federal Reserve profits less rest-of-the-world profits, and (2) Federal Reserve profits. Taxes respond in different ways to inflation-induced changes in these two components. Rest-of-the-world profits are assumed not to be sensitive to domestic inflation.

The elasticity of corporate profits taxes with respect to modified profits, as described in the November 1980 article (pp. 35–38), depends on the elasticities of (1) the average tax rate with respect to income subject to tax

(IST), (2) IST with respect to modified profits, and (3) tax credits with respect to modified profits. The first of these elasticities measures the effect of the lower rate levied on the first $100,000 of corporate profits. This effect is very small. The second elasticity is sensitive to relative changes in gains and losses (corporate profits is equal to the profits of profit-making corporations minus the losses of other corporations). When the source of change in profits is cyclical variation, sharp variations in losses relative to gains make this elasticity less than 1.0. When the source of change is inflation, however, losses and gains may be expected to rise at roughly the same rate and thereby keep this elasticity at approximately 1.0. The third elasticity, that of tax credits with respect to modified profits is assumed to be 1.0 whether the source of change is cyclical variation or inflation. These component elasticities lead to an inflation elasticity of corporate profits taxes with respect to modified profits of 1.0, higher than the cyclical elasticity of 0.8.

For Federal Reserve profits, the supplemental equation is used to make direct estimates of inflation-induced changes in tax receipts. Such estimates can be made because the base and the tax are approximately equal.

Indirect business taxes.—The tax base for indirect business taxes is GNP; that is, the response of taxes for each individual taxed commodity (e.g., alcoholic beverages) is converted from an elasticity with respect to changes in sales of the specific commodity to an elasticity with respect to changes in GNP. The responses for major categories of indirect business tax receipts are taken from a study by the Office of Management and Budget of the demand for alcoholic beverages, tobacco, gasoline, and other taxed commodities.[7] The inflation elasticity of the windfall profits tax is assumed to be zero. The inflation elasticity for indirect business taxes, shown in table 8, is a weighted average of these individual responses.

Contributions for social insurance.—The response to inflation of

7. Darwin G. Johnson. "The Sensitivity of the Budget to Inflation and the Business Cycle," Office of Management and Budget technical staff paper (September 1979), p. 13.

payrolls, the tax base for social insurance contributions, is given by the wage and salary share equation. The cyclical elasticity of social insurance contributions with respect to changes in wages and salaries—estimated separately for social security and for unemployment insurance—depends on: (1) the elasticity of contributions with respect to employment and (2) the elasticity of contributions with respect to average wages.[8]

Inflation is assumed to affect wages but not employment; therefore, the inflation elasticities for contributions are set equal to the average wage elasticities. These are shown in table 8.

Expenditures

For expenditures, the estimates of inflation-induced changes are limited to categories that change automatically when prices change. For most categories the classification is easy to make; but there are a few borderline cases. Federal pay is one; raises are linked to salaries in the private sector under the Pay Comparability Act of 1970, but they are subject to further adjustment by Congressional or Presidential action. For this article, pay raises are assumed to be automatic responses to inflation. Purchases of goods for which unexpected price increases are often followed by an additional Congressional appropriation, however, are excluded.

It is convenient to separate inflation-sensitive expenditures into two categories: (1) directly indexed and (2) nonindexed but automatically sensitive.[9] For directly indexed programs (social security, for example), the basic approach to estimating inflation-induced changes is to multiply expenditures by the percent change in an appropriate price index. For each directly indexed program,

$$(3) \qquad \Delta E_t^* = E_t \left(\frac{\Delta P_t}{P_t} \right)$$

where:

ΔE_t^* = the current change in the high-employment expenditure attributable to inflation;

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8. de Leeuw, et al., " High-Employment Budget," p. 39.

9. For both categories of expenditures, the inflation adjustments are designed to show the effective date of the dollar adjustment in the NIPA's.

E_t = the current level of the high-employment expenditure;

ΔP_t = the percent change in the price series P_t used to index the program (e.g., the CPI for social security).

A similar approach is used for some nonindexed inflation-sensitive expenditures—medicaid expenditures, for example, where there is no legislated link to a price index but where expenditures automatically rise when prices of medical goods and services rise. For other nonindexed inflation-sensitive expenditures, a more complex approach is necessary.

Directly indexed programs.—Prior to 1962, no sizeable Federal program was directly linked to changes in a specific price index. In 1963, legislation provided that military retirement benefits would automatically increase with increases in the CPI. Since that time, the addition of other major Federal programs—notably social security in 1975—has substantially increased the sensitivity of expenditures to inflation. Table 9 shows the effective dates of the initial inflation adjustment of major indexed programs and the price index used.

The indexing provisions of social security illustrate the general procedures used. Social security benefits are linked to changes in the CPI for urban wage and clerical workers. Changes in the CPI from the first quarter of the previous year to the first quarter of the current year are used to adjust benefits in July of the current year; that is, the inflation adjustment occurs at the beginning of the third quarter.[10] Therefore, the price index is constructed to show a "step" change in the third quarter and no change in other quarters. The timing of inflation adjustments varies among indexed programs, and for each one an appropriate price index is constructed in the same basic way as for social security.

Nonindexed inflation-sensitive programs.—Federal expenditures that are not explicitly linked to changes in specific price indexes, but that nevertheless change automatically with changes in prices or wages, include medicare, medicaid, regular unemployment benefits, Federal pay, and net interest. The first two provide payments for medical care, which rise as the cost of that care rises. To estimate the inflation-induced change in medicare and medicaid payments, the medical care component of the CPI is used.

Regular unemployment benefits rise as the average wage rate rises. The results of recent studies of wage behavior were used to estimate the inflation-induced portion of changes in average wages as a function of a weighted average of current and past

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10. If the CPI increases by less than three percent or declines, no adjustment to benefits is made.

Table 8.—Elasticities of Receipts with Respect to Inflation-Induced Changes in Tax Bases

Year	Personal taxes	Corporate profits taxes	Indirect business taxes	Social security contributions	Unemployment insurance contributions
1955	1.66	1.0	0.53	0.61	0.45
1956	1.63	1.0	.56	.69	.42
1957	1.60	1.0	.53	.67	.39
1958	1.66	1.0	.50	.64	.39
1959	1.61	1.0	.50	.69	.38
1960	1.61	1.0	.50	.57	.37
1961	1.59	1.0	.48	.56	.36
1962	1.58	1.0	.49	.54	.36
1963	1.58	1.0	.49	.52	.35
1964	1.64	1.0	.50	.54	.33
1965	1.64	1.0	.47	.49	.33
1966	1.60	1.0	.42	.63	.33
1967	1.59	1.0	.42	.60	.32
1968	1.55	1.0	.45	.65	.30
1969	1.58	1.0	.45	.62	.30
1970	1.56	1.0	.45	.59	.29
1971	1.59	1.0	.44	.57	.29
1972	1.61	1.0	.39	.60	.34
1973	1.59	1.1	.40	.65	.32
1974	1.58	1.0	.40	.72	.31
1975	1.68	1.0	.37	1.00	.31
1976	1.68	1.0	.40	1.00	.30
1977	1.72	1.0	.41	1.00	.29
1978	1.70	1.0	.44	1.00	.35
1979	1.67	1.0	.44	.80	.34
1980	1.67	1.0	.34	.80	.34
1981	1.67	1.0	.27	.80	.34

Table 9.—Effective Date of Initial Inflation Adjustment, Directly Indexed Expenditure Programs

Program	Date of initial adjustment in NIPA's	Index used
Military retirement benefits.	1963:4	CPI.
Civil Service retirement benefits.	1966:4	CPI.
Workers' compensation for Federal employees (FECA).	1966:4	CPI; General Schedule of Federal salaries.
Coal Miners' disability and survivor benefits (Black lung programs).	1971:1	General Schedule, GS-2 level.
Food stamps.	1971:3	Thrifty Food Plan Index.
Child nutrition.	1974:1	CPI for food away from home; Producer Price Index for selected commodities.
Old-Age, survivors, and disability insurance (OASDI) benefits.	1975:3	CPI.
Railroad retirement benefits.	1975:3	CPI.
Supplemental security income (SSI).	1975:3	CPI.
Veterans pensions and survivor benefits.	1979:3	CPI.

Note.—CPI is the Consumer Price Index.

changes in the GNP deflator.[11] This portion was used to calculate inflation-induced changes in regular unemployment benefits.

Federal pay raises are explicitly linked to the salaries of private sector workers in comparable occupations under the Pay Comparability Act of 1970. Under this act, an annual percentage adjustment to achieve Federal worker salary comparability is calculated. This adjustment becomes effective in October of each year unless the President substitutes an alternative or Congress disapproves the recommended adjustment. In this article, the increases that actually occur in Federal pay since the act took effect are attributed to inflation.

Inflation affects net interest payments in two ways. First, interest rates tend, after a lag, to reflect changes in inflation rates. Second, inflation affects the debt on which interest must be paid through its impacts on receipts and expenditures. The interest rate effect works in the opposite direction from the debt effect. It is necessary to take account of both effects to make an estimate of

the impact of inflation on interest payments.

To estimate the effect of inflation on interest rates, net interest payments were divided into two categories, interest payments on Treasury bills and interest payments on net debt (total debt held by the public minus direct loans outstanding) excluding Treasury bills. An effective interest rate for each category was calculated. Regression equations were then used to estimate the response of these interest rates to inflation. The equation for the effective Treasury bill rate, a relatively short-term rate, is:

$$(4) \quad R_t = \underset{(-3.0)}{-0.058} + \underset{(3.0)}{0.018(Y/M)_t} - \underset{(-1.3)}{0.054\,\Delta(Y/M)_t}$$
$$\underset{(-2.0)}{-13.54\,(DP_t \cdot GNPGAP_t)}$$
$$+ \sum_{i=0}^{5} \underset{(4.4)}{w_i DP_{t-i}}$$

$$w_0 = 1.60$$
$$w_1 = 0.76$$
$$w_2 = 0.43$$
$$w_3 = 0.39$$
$$w_4 = 0.45$$
$$w_5 = 0.39$$
$$\Sigma w_i = 4.02$$

Period of fit: 1970:1–1981:1; $R^2 = 0.66$; D-W = 0.43.

where:

R = the effective interest rate on Treasury bills (annual rate);
Y/M = GNP divided by the money supply (M1-B);
DP = the percent change (quarterly rates) in the GNP deflator [12];
GNPGAP = the GNP gap.

Because R is an effective annual rate and DP is a quarterly rate, the sum of the coefficients of current and lagged DP, 4.02, suggests that a one percentage point rise in the annual inflation rate causes R to rise by (4.02÷4), or 1.01 percentage points when the GNP gap is zero. The DP·GNPGAP variable causes the impact of inflation to fall moderately when GNP is below potential and to rise moderately when GNP is above potential.

The equation for the effective rate on net debt excluding Treasury bills, a relatively long-term rate, is:

$$(5) \quad RL_t = \sum_{i=0}^{19} \underset{(27.9)}{w_i R_{t-i}} + 0.843 u_{t-1}$$

$w_0 = 0.058$	$w_7 = 0.067$	$w_{14} = 0.046$
$w_1 = 0.061$	$w_8 = 0.066$	$w_{15} = 0.041$
$w_2 = 0.063$	$w_9 = 0.064$	$w_{16} = 0.034$
$w_3 = 0.065$	$w_{10} = 0.062$	$w_{17} = 0.027$
$w_4 = 0.067$	$w_{11} = 0.059$	$w_{18} = 0.019$
$w_5 = 0.067$	$w_{12} = 0.056$	$w_{19} = 0.010$
$w_6 = 0.067$	$w_{13} = 0.051$	$\Sigma w_i = 1.052$

Period of fit: 1968:3–1980:3; $R^2 = 0.94$; D-W = 2.40.

where:

RL = the effective interest rate on net debt excluding Treasury bills (annual rate);
R = the effective interest rate on Treasury bills (annual rate) [13];
u = the error term.

The sum of the R coefficients, 1.052, implies that a change in the short-term rate R is eventually followed by a slightly larger change in the long-term rate RL. The lag is very long; over short periods RL is much smoother than R. The impact of inflation on RL takes place through its impact on R and therefore develops slowly.

The impact of inflation on the debt is due to its differential impact on receipts and expenditures. Because inflation tends to increase receipts more than expenditures, it decreases the debt (or reduces the increase in the debt). Estimates of the debt effect are based on simulations of the entire set of receipts and expenditure equations described in this article. The allocation of the debt effect between Treasury bills and other net debt is based on regression estimates of the change in bills associated with each dollar of surplus or deficit and of the change in other net debt associated with each dollar of surplus or deficit.

The effects of a change in the rate of inflation on interest payments continue to develop over many quarters, partly because of the long lags in the long-term rate equation and partly because the debt effects continue to grow over time. The calculations reported here are based on a four-quarter time-span; that is, they measure, for each quarter, the interest rate and debt effects during four quarters ending with the current quarter. The reason for choosing a four-quarter cutoff is that the impact on *changes* in interest payments, which is the focus of this study, settles down to a stable amount after four quarters of a sustained change in the rate of inflation.

11. See Robert J. Gordon, "Can the Inflation of the 1970's be Explained?" *Brookings Papers on Economic Activity,* no. 1 (1977), especially pp. 264–272.

12. The weights for the price-change variable were estimated by the Almon technique, using a third-degree polynomial constrained to zero at the far end.

13. The weights for the effective interest rate on net debt excluding Treasury bills were estimated by the Almon technique, using a third-degree polynomial constrained to zero at the far end.